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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/978,350	10/15/2001	Stephen C. Ennis	5500-71500	4675

7590

04/22/2004

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EXAMINER

PHAN, RAYMOND NGAN

ART UNIT	PAPER NUMBER
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2111

DATE MAILED: 04/22/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/978,350

Applicant(s)

ENNIS ET AL.

Examiner

Raymond Phan

Art Unit

2111

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-14 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)                      4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_.
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)                      5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 3-4.                      6) ☐ Other: .

### **Part III DETAILED ACTION**

#### ***Notice to Applicant(s)***

1. This application has been examined. Claims 1-14 are pending.
2. The Group and/or Art Unit location of your application in the PTO has changed. To aid in correlating any papers for this application, all further correspondence regarding this application should be directed to Group Art Unit 2111.

#### ***Specification***

3. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

#### ***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. § 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1-3, 7-10, 14 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Avery (US No. 6,691,185) in view of Leger et al. (US No. 5,983,291).

In regard to claims 1, 8, Avery discloses a control unit of an input/output node for a computer system comprising a plurality of scheduler units including a first plurality of buffers coupled to receive control commands from a first source (i.e. input port) (see figure 3, col. 4, lines 12-23); a second plurality of buffer

coupled to receive control commands from a second source (i.e. internal port) (see figure 3, col. 4, lines 30-41); an arbitration unit coupled to the first plurality of buffers and the second plurality of buffers to arbitrate between the control commands stored in the first plurality of buffers and the control commands stored in the second plurality of buffers (see figure 3, col. 3, line 59 through col. 4, line 62). But Avery does not specifically disclose the first buffer circuit that includes the plurality of buffer each corresponding to a respective virtual channel of a plurality of virtual channels and the second buffer circuit that includes the plurality of buffer each corresponding to a respective virtual channel of a plurality of virtual channels. However the first buffer circuit that includes the plurality of buffer each corresponding to a respective virtual channel of a plurality of virtual channels and the second buffer circuit that includes the plurality of buffer each corresponding to a respective virtual channel of a plurality of virtual channels (see figure 6, col. 4, line 47 through col. 5, line 62). Therefore, it would have been obvious to a person of an ordinary skill in the art at the time the invention was made to have combined the teachings of Leger et al. within the system of Avery because it would allow a single SIO port to handle multiple sub-functions of the I/O operations.

In regard to claims 2, 9, Avery discloses wherein the arbitration unit is configured to arbitrate based upon a set of predetermined criteria (see col. 6, lines 6-55).

In regard to claims 3, 10, Avery discloses wherein the set of predetermined criteria includes an arbitration algorithm and a determination of whether storage space is available within a destination buffer (see col. 6, line 6 through col. 7, line 31).

In regard to claims 7, 14, Avery discloses wherein the first and second plurality of buffers are FIFO buffer structures including a plurality of storage location (see col. 4, lines 12-29).

6. Claims 4-6, 11-13 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Avery in view of Leger et al. and further in view of Keller et al. (US No. 6,557,048).

In regard to claims 4, 11, Avery and Leger et al. disclose the claimed subject matter as discussed above rejection except the teaching of wherein the arbitration unit is further configure to provide an indication to the first source in response to selecting the control commands stored in the first plurality of buffers. However Keller et al. disclose the interface logic configure to provide an indication (i.e. response packet) to the first source in response to selecting the control commands stored in the first plurality of buffers (see col. 9, line 61 through col. 10, line 48). Therefore, it would have been obvious to a person of an ordinary skill in the art at the time the invention was made to have combined the teachings of Keller et al. within the systems of Avery and Leger et al. because it would provide properly ordered memory operations with respect to other pending memory operations in order to preserve memory coherency within the computer system.

In regard to claims 5, 12, Keller et al. disclose wherein the arbitration unit is further configure to provide an indication to the second source in response to selecting the control commands stored in the second plurality of buffers. (see col. 9, line 61 through col. 10, line 48). Therefore, it would have been obvious to a person of an ordinary skill in the art at the time the invention was made to have combined the teachings of Keller et al. within the systems of Avery and Leger et

al. because it would provide properly ordered memory operations with respect to other pending memory operations in order to preserve memory coherency within the computer system.

In regard to claims 6, 13, Keller et al. disclose wherein the plurality of virtual channels included a posted channel, a non-posted channel and a response channel (see col. 11, lines 36-54). Therefore, it would have been obvious to a person of an ordinary skill in the art at the time the invention was made to have combined the teachings of Keller et al. within the systems of Avery and Leger et al. because it would provide properly ordered memory operations with respect to other pending memory operations in order to preserve memory coherency within the computer system.

### ***Conclusion***

7. All claims are rejected.

8. The prior arts made of record and not relied upon are considered pertinent to applicant's disclosure.

**Miller et al. (US No. 6,247,058)** disclose a method and apparatus for processing network packets using time stamps.

**Murase (US No. 5,793,748)** discloses a priority control method of virtual circuit and a device thereof.

**Lai et al. (US No. 6,546,448)** disclose a method and apparatus for arbitrating access to a PCI bus by a plurality of functions in a multi-function master.

**Katayanagi (US No. 6,414,961)** discloses an ATM switching with virtual circuit FIFO buffers.

**Owen et al. (US No. 6,721,813)** disclose a computer system implementing a system and method for tracking the progress of posted write transactions.

**Clark et al. (US No. 5,187,780)** disclose a dual-path computer interconnect system with zone manager for packet memory.

**Nguyen et al. (US No. 6,539,439)** disclose a method and apparatus for interfacing a bus at an independent rate with I/O devices.

**Askar et al. (WO No. 03/034240)** disclose a peripheral interface circuit for an I/O node of a computer system.

**Ennis (US No. 6,681,274)** discloses a virtual channel buffer bypass for an I/O node of a computer system.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to examiner Raymond Phan, whose telephone number is (703) 306-2756. The examiner can normally be reached on Monday-Friday from 6:30AM- 4:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's Primary, Paul Myers can be reached on (703) 305-9656 or via e-mail addressed to paul.myers@uspto.gov. The fax phone number for this Group is (703) 872-9306.

Communications via Internet e-mail regarding this application, other than those under 35 U.S.C. 132 or which otherwise require a signature, may be used by the applicant and should be addressed to [raymond.phan@uspto.gov].

All Internet e-mail communications will be made of record in the application file. PTO employees do not engage in Internet communications where there exists a possibility that sensitive information could be identified or exchanged unless the record includes a properly signed express waiver of the confidentiality requirements of 35 U.S.C. 122. This is more clearly set forth in the Interim Internet Usage Policy published in the Official Gazette of the Patent and Trademark on February 25, 1997 at 1195 OG 89.

Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionist whose telephone number is (703) 305-3900.



**Raymond Phan**  
4/19/04